Patent Abstracts of Japan

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APPLICANT : DAIDO STEEL CO LTD;

INVENTOR : DEMUKAI NOBORU;

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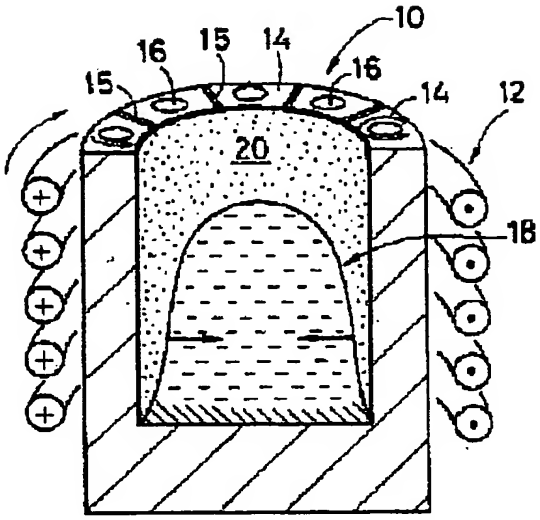
F27B 14/06 H05B 6/32

TITLE : METHOD FOR COLD CRUCIBLE LEVITATION MELTING



ABSTRACT : PURPOSE: To prevent molten from being immediately solidified and adhering to an inner wall surface of a crucible further improve the yield of the product by a method wherein a cold crucible levitation melting is carried out by using the crucible having the inner wall surface coated with a refractory ceramic coating.

CONSTITUTION: A copper crucible 10 is made such that a high frequency induction heating coil 12 is arranged to enclose the crucible 10 on its outer circumference. A side wall of the crucible 10 is divided into a plurality of segments 14 through insulation joint materials 15. Each of the segments 14 is formed with a cooling water hole 16. In a system in which metallic raw materials are cold crucible levitation melted, an inner wall surface of the crucible 10 is coated with a ceramic coating 20 comprised of mixture material of Y_2O_3 and ZrO_3 sols with a thickness less than 5000μm. With such an arrangement, even if there is a possibility that the molten metal is contacted with the inner wall surface due to an oscillation of oil column within the crucible, the molten metal is prevented from being immediately solidified due to a thermal insulating action of the coated material 20.

Patent Abstracts of Japan

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APPLICANT : NIPPON STEEL CORP;

INVENTOR : HASHIMOTO KEIZO;

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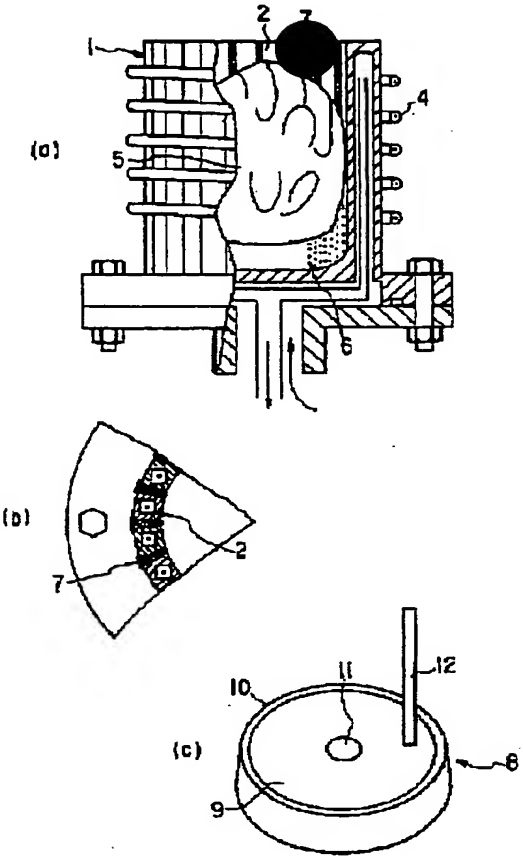
C22C 1/02

TITLE : SKULL MELTING FURNACE AND PRODUCTION OF HIGH PURITY ALLOY USING IT



ABSTRACT : PROBLEM TO BE SOLVED: To ensure overheating of molten while preventing contamination from a crucible by applying ceramics lining to a water cooled copper segment and providing an opening/closing ceramic cover.

SOLUTION: A water cooled copper segment 2 constituting a water cooled copper firth 1 is lined with ceramics 7. Yttria or calcia is preferably employed as ceramic because of low reactivity but alumina maybe employed satisfactorily because it is cooled by touching the water cooled copper herth 1. Magnecia is not preferable because it react strongly on a molten. Lining is applied only between slits while taking account of balance between thermal insulation and cooling. A columnar ceramic cover 8 is fixed while being spaced apart slightly from the water cooled copper firth 1 and suspended by means of a ceramic rod 12 in order to ensure overheating without confining heat. According to the structure, a high purity molten alloy can be produced while ensuring high overheating and suppressing contamination from the furnace.